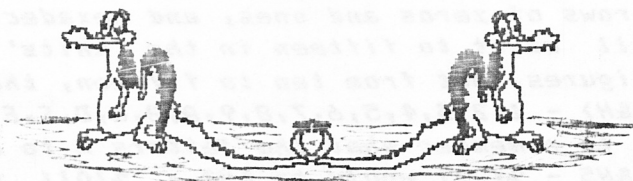


The Newsletter of the National Dragon Users Group

DRAGON



UPDATE

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The Gaffer's Bit . . . . .

As you'll see if you bother to plough through this issue, there's no "Late Bits" this month ... mainly because I'm pushed for space and partly because there's not much to write about!. Please note that Stephen will NOT be available for two weeks from 25th. July (so please don't try to phone him during that period!), and that the SEPTEMBER issue of Update will be much smaller than usual as I have to pull the wiring on this place and photocopiers and computers don't work too well minus electricity!. Right, that's all the "awful warnings" out of the way, so now for the news ..... there isn't really any, but you can make a note in your diary that I'm provisionally booking the Hove hall for 2nd. June 1990, and unless something totally disasterous happens between now and then there will be another "Summer Show" on that date, so don't try the excuse that you've booked your holiday at the Milton Keynes Marina for that date!. I haven't heard anything from Andrew Hill yet, so I don't know what arrangements he has made for his show later this year, but I'll let you have details as soon as I get them. Off subject, has anyone got such a thing as a GOOD 12V 1.1A DC power supply they want to dispose of?. I need one to use with a JCO1 Camcorder ... having to recharge the batteries every 90 minutes is a pain in the anatomy!. I've a message for all retailers from the Dragon Computerklubb, Norway. Owing to management problems the Club is closing down, but they would like to distribute YOUR advertisements with their final newsletter so that former members will know where to send their orders. They are making NO charge for this, so if you would like to send them 50 copies (A4/A5) of your current advertisement/price list, with details of postage and packing for Norway you could be doing yourselves some good, and making things more interesting for Dragon users in Norway. Deadline is 5th. August. Send to Ola Eldoy, Stokken, N-5410 SAGVAG, Norway. Right, that's all from me this month, so now you can get on with the more interesting stuff while I go and find a drink. Paul.

The Editor's Bit . . .

There is absolutely nothing happening this month, so I am pretty damn bored. There isn't any news which is anywhere near newsworthy (work that one out), I've got loads of other projects underway which I'd rather be doing right now, and 'Film 89' isn't on again for another two months. As well as that, 'Dallas' has just finished its current series, the BBC won't ever be showing 'Moonlighting' again, and Paul is still as uncomplimentary as ever.

Other than that, it's raining (in JUNE!), BOTH of my players in my school's Wimbledon sweepstake have been knocked out ALREADY. Newsfield's 'MOVIE' magazine hasn't been seen for two months, and 'Batman' isn't out until August.

Pretty dull, no?  
Stephen.

N.D.U.G IS FIVE YEARS OLD NEXT MONTH!

EASY MACHINE CODE (2) . . R.A. DAVIS

As we saw, a half byte, a nibble, will count up to 15. But it's inconvenient to use numbers which are rows of zeros and ones, and hexadecimal notation make the job easier. This will count to fifteen in the 'units' column. From 0 to 9 we use ordinary decimal figures, but from ten to fifteen, the letters A to F are used. The count is:- (&H) - 1,2,3,4,5,6,7,8,9,A,B,C,D,E,F.

The hardest part is to remember what the letters A to F stand for. The binary number %0101 would be &H5 - %1001 would be &H9 - %1011 would be &HB (11 in decimal). That's not very difficult.

The Dragon uses a whole byte to to work with, this can be split into the High nibble and the Low nibble: For example, the binary byte %00010001 can be split into 0001 and 0001. the Hexadecimal is &H11. The decimal is 17. Binary %11111111 is &HFF, decimal 255. Try a few numbers until you get the hang of it. The Dragon will always oblige with a check. Try PRINT &HFF. Also PRINT HEX\$(decimal number). These are the tools you need. Next for the 6809 itself.

Hove Dragon Show...Frank Fisher.

Before I get to the nitty gritty, I would like to thank Paul Grade for organising this show, as well as the exhibitors who, at great expense, attended. A special mention to the caterers, Bingham's, for the lavish and indeed succulent refreshments they provided, and for all the show helpers. Paul tells me that there were people who attended from the North of England, Scotland, France, and Belgium. - those of you who lived within a fifty-mile radius and did not attend should hang your heads in shame. There were also a few glitches, such as power failures and exhibitors losing stuff off of their stalls, but the good news is that over 400 turned up!

The Hove Town Hall was easily found, not so the Great Hall, but once inside, the size of the hall did not overshadow the show. Indeed, the place looked crowded. Starting on the left and going clockwise, the first stall was Kouga showing off their latest offerings, followed by the irrepressible Bill MacGowan and his lovely wife Joyce, and as I have done at most shows, I stopped to have a chat with her. She did tell me that they may not be attending due to the distance involved, but there they were. Next stop was Protech/P.G.Scott who were showing Dragon innards and interfaces, as well as DOSPlus 4. Onto Mr. Sutcliffe and his business software, with a hardware device to fit a DOS cartridge inside the computer. Moving swiftly on I stopped briefly at the DUDE group stand and signed on for their PD software, then on to New Era who told me that my magazine was in the post. Next, on to meet our illustrious leader Paul and his grovelling editor Stephen (XXLies, all lies!!..SWXX), they were selling lots of NDUG goodies and soft/hardware.

Round the corner was the stand that was to have been occupied by Bob Harris, which instead was taken by Mr. Cook selling a lot of redundant hardware (ie Commodores), monitors, printers etc. I made his day by buying a pair of Olivetti ribbon printers for a tenner. The remaining stalls were Pulser, Computape, John Penn, and Preston.

In the centre I found Greenweld Electronics, who were showing off keyboards, power supplies etc, followed by CompuTeach, a computer learning course. Stopping briefly at Mr. Hall's stand to admire a weather satellite program, I passed by Chris Rouse and and the 68 Micro Group to look at the Siegfried Schraunbenzieher Gruppe's stall. They came all they way from Germany for this show, and are into hardware mods. The most impressive was a Mouse interface, the speed and accuracy of which had to be seen to be believed. Travelling further round I found Nic Spiers, Alan Butler, DragonArt, and Jason Shouler. Last but not least was Knight Software, who were demonstrating their Dragon Graphics Studio.

All in all, a great show, and hard luck to those who missed it!

The FOR/NEXT Loop(2) ... J. R. Winchurh.

In the first article we looked at the use of a simple counter. We finished by comparing 2 short programs, one using the counter and one the FOR...NEXT loop, in order to achieve the same result. It should have been obvious which of the two was tidier, the more elegant, even if you did not altogether understand what is happening with the FOR...NEXT loop. It does not take much imagination to visualise the comparable length of two full-blown programs, one using the simple counter method, the other the FOR...NEXT loop. There is a place for the simple counter method, but we must avoid at all costs tying ourselves in GOTO knots. Let us compare our very first program with its relative FOR...NEXT counterpart:-

```

10 CLS          10 CLS @ 20 C=1          20 FOR C=1 TO 10
30 PRINT C      30 PRINT C
40 C=C+1        40 NEXT C @ 50 GOTO30

```

It is obvious that the counter C is open-ended in the earlier program, but a limit has been imposed in the FOR...NEXT loop. This is necessary by virtue of the syntax of the FOR...NEXT statement - there has to be a lower and upper limit. Thus we see the second major difference between the two methods. "FOR C=1 TO 10" simply means "Let C start at 1 and go on towards 10, but no further". "NEXT" tells the computer (in this case) to add 1 to C. So the program could read in layman's terms:-

```

10 Clear Screen
20 Let C start at 1 and go no further than 10
30 Print C on the screen
40 Add 1 to C and go back to line 30, but when C has reached 10 end the program

```

Suppose we need a program to print a list of numbers, and their square roots:-

```

10 CLS
20 C=1
30 PRINT C,SQR(C)
40 C=C+1
50 IF C<10 THEN GOTO 30 ELSE END

```

What is happening here is that the screen will show C and its equivalent square root. C is then increased by 1, and the next equivalent square root shown, until 10 is reached, by which time the numerals 1 to 9 and their square roots have been printed out. Note again that the program works only whilst C is less than 10, once it reaches 10 it stops. The FOR...NEXT program would be:-

```

10 CLS          Clear Screen
20 FOR C=1 TO 10 Let C start at 1 and go upto but no further than 10
30 PRINT C,SQR(C) Print the number C and its square root
40 NEXT C       Add 1 to C and go back to 30, providing that C is still
                less than 10, otherwise end the program.

```

Note that the count does not have to start at 1, or jump in steps of 1:-

```

10 CLS          10 CLS
20 C=5          20 FOR C=5 TO 60 STEP 3
30 PRINT C      30 PRINT C
40 C=C+3        40 NEXT C
50 IF C<60 THEN GOTO30 ELSE END

```

In this example we start at 5, not 1, and go up in steps of 3: 5,8,11,14,17 etc until we reach the upper limit, or as near to it as possible (here, 59). Experiment with these two programs by changing various values. And to complicate matters, how about starting at a high number and descending:-

```

10 CLS          10 CLS
20 C=100        20 FOR C=100 TO 0 STEP -5
30 PRINT C,SQR(C) 30 PRINT C,SQR(C)
40 C=C-5        40 NEXT C
50 IF C>0 THEN GOTO 30 ELSE END

```

Note that 0 is the lower limit, at which point the program stops, and we descend in increments of 5: 100,95,90 etc.

Next month, we will look at nesting!



PEEKING THE DRAGON (16) - MIKE STOTT

Since my last article there has only been three new items of software that have dropped through my letter box and these are all releases from our own Group. As I received them just after sending out my last article I have had a fairly good look at them. They have all been sent to me on Dragondos disk, priced at 3.50 each. The first is ANIMUS which is a varied selection of music written by Dave Cadman to which has been added graphics by Tony Davis. What can I say? I particularly liked the Belly Dancer and the Skeletons although they are all very good, with all the movement being in time with the music. A lot of time and effort has gone into producing this novelty for our enjoyment. The second is FUN DISC which is a collection of programs again from Tony Davis. There are games like Battleships, a collection of quizzes on various subjects, Chinese Horoscopes (I now know I am a rat which is what many of you have thought for a long time), some nice little utilities, a picture (no comment), and even a selection of some useful Peeks and Pokes. The last one is BEST OF INPUT which is a selection of programs from Input magazine which was the magazine that I gained most of my knowledge from in the early days. There is a workable spreadsheet, flight simulator, games and utilities. In fact something for all the family.

Pulser have also sent me the disk version of REVENGE OF THE ALIEN BONGO BEAST etc which they are putting out for Kouga. John Foster of Kouga has now given me permission to release the cheat for Balldozer, which I used initially to test all the screens, although I am now able to attain the final screen without its use. Hold down the keys C, L, E, and G together and then each time Q is pressed you will move on to the following screen although it is not easy to restart the game in this mode as SHIFT, C, L, E, and G need to be pressed together. Expect to lose a life on most occasions.

I have just upgraded my second drive from a 40 track double sided to a switchable 40/80 double sided and am therefore able to look at a wider variety of disks. Although Dragondos version 1.0 will remain my main Dos chip I do have a selection of others including Superdos and hope soon to have a ZIF switch fitted to make easier the task of changing from one Dos to another. I own a Co-Co as well as 64s and 32s so you can send me your software in whatever format.

I am just beginning to find out how difficult this job is. In the past I have been criticised for not giving bad reviews for software yet I have now been told by several companies that I am the most difficult Dragon reviewer to please. I have always tried to be as fair as I can and I will carry on the same way. During the twelve months I have been Software Editor I have received some eighty odd items either for review, testing on another Dos or on another machine, or just for giving my views on the programs prior to completion. Don't get me wrong. I enjoy doing it as I want to see the Dragon continue for many years to come. With all those items of software it looks as though many other people do too.

LATE NEWS - Just arrived through my letter box (not literally) came a large parcel of Preston software. HOTEL ON MAYFAIR which I had loading problems with before - unfortunately needs alterations to make it run on a 64. The others I have not even had time to test yet are OLYMPIA, DOMINOES, INVADER CUBE, DRAGON DARTS, ZOTOKA, COPTA SNATCH, and MUSIC MAESTRO. Apart from the last item I have already got all these items in my own collection of software, some of them being old Oasis software. Still, many newcomers to the Dragon scene will not have heard of many of these titles.

As we have very few reviewers willing to undertake games, offers of help in this area would be greatly appreciated.



OS912 on a 256K Dragon(8)...Bob Hall

After signing off last month, I discovered enough bugs and other exciting features to deserve another fun-packed episode! Here are 2 extra topics to bring the story up to date:-

i) the mods to hardware & software to run 256K (using 4125s); these include a slightly neater solution to the circuitry of IC5.

ii) a fix to a funny I've found when using "cocoswitch" with DragonDOS 1.0.

i) The circuit for running 256K DRAMS, given in the figure, replaces both IC101 (the 'casbank' controller) and IC102 of the 128K design. It uses half of a 74LS153/253 (IC103) to provide a multiplexed 9th address line to the RAMs (cf the Banker Board design, issue 34). The output of IC103 goes via a 30ohm resistor to all pins 1 on the nes 41256 DRAMS; you can use the existing track on the Dragon main board for this provided you double-check you've disconnected from the supply voltages (it carried -5V to the old style 16K RAMs!) and removed ALL the decoupling capacitors.

Strictly, you should also swap your SAM chip for the newer 74LS785 (available from Tandy or Compusense for about 15.00) to ensure adequate '256 cycle refresh' of the 41256 DRAMS, but in my experience there appears to be no problem here, and once the hi res screen is up, the rams are being refreshed adequately by the action of the VDG alone. By the way, if you're upgrading all the way from 32K for the first time, and invest in a 'LS785, you don't need to make the 'dreaded decoder mod.' described in the Upgrade manual.

It's convenient to use a modified circuit for IC5 (IC5A?), replacing the 'LS158 with two gates of an 'LS00. Besides being slightly cheaper, this solution has the advantage that the other gates can be rearranged as shown, together with a gate from IC12, to avoid the need for using a gate from IC102 to control IC7.

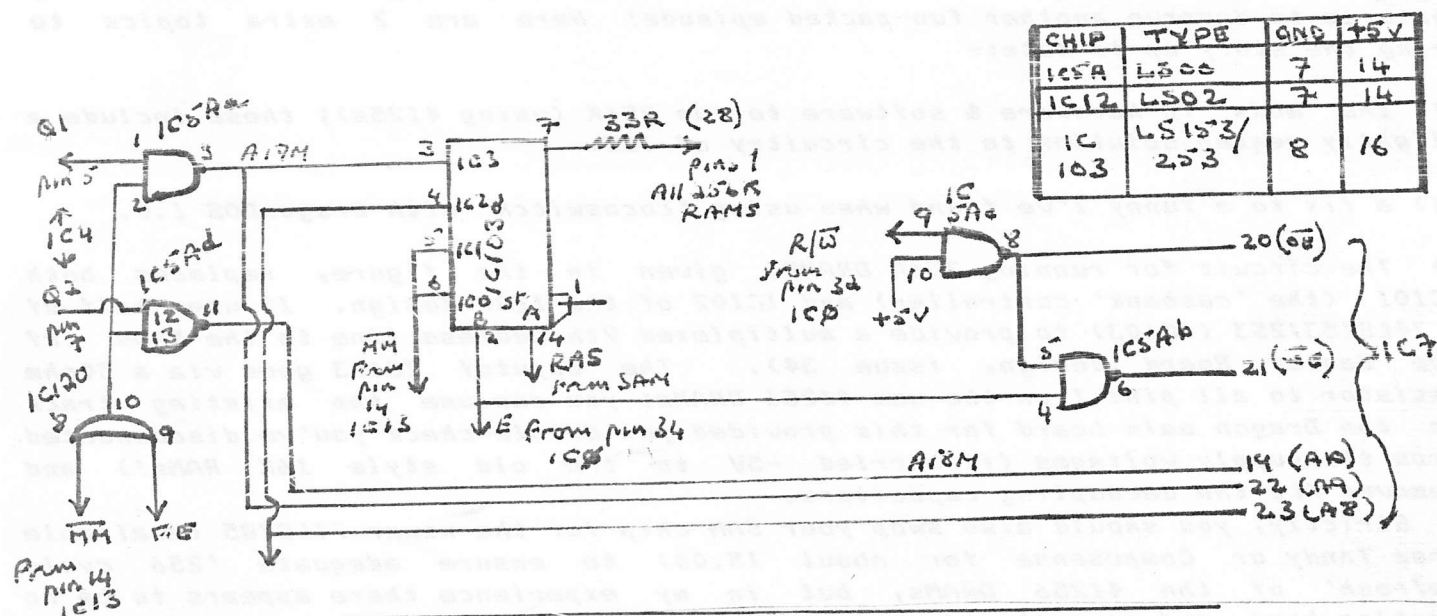
To eliminate the need for a latch to hold the 64K bank for the video RAM, the video bank is in bank 7 initially, and bank 0 when OS912 has been booted; I've hardwired the change by taking the VDG extended addresses (A16 & 17) to pins 4 & 3 respectively) from the MMU register IC13. The only problem with this is that the screen is switched before the BASIC program has reached the pauseinput statement, which can be disconcerting; the fix described in (ii) overcomes this...

Running 256K with OS912 also needs a patch to the startup routine in OS9P1, (which as provided by Tandy only expects 128K or 512K machines). The patch is achieved by adding the following line(X) to the startup program (COCSWITCH):-

```
65 poke&h2a20,&h0f;poke&h2a3b,&h1f;poke&h37d6,&h9d;poke&h37d7,&h5d;poke&h37d8,&h96.
```

(ii) I took both my 128K and 256K machines down to the Hove show (well organised Paul!) together with John Payne's disk drive... and discovered an incompatibility of the BASIC startup program with DragonDOS 1.0. Don't know why it is, but the fix is to move the prompt and pause (towards the end of line 110) to line 55, ie immediately after the two load statements. You need a pause to change disks on a single drive setup.

At the show, Rob Schofield told me he can reduce the glue logic controlling IC7 to only 4 gates, and I hope he'll reveal the secret to us all soon. Also at the show, several people confessed/complained that they couldn't understand a word of these articles. They may or may not be pleased to know that a rerun, clarified, shortened and debugged by Rick Applegate, will eventually appear in '68 Microcosm'. (X) My Lord Wood commanded that I be brief! Bob Hall.



# CROSSWORD No.44. Compiled by J.D. Bateman

**ACROSS:** 1A, This person may have a ball made of crystal. 21, Meat spread (usually liver). 33, White sometimes perfumed powder. 4B, Fall of rocks or earth caused by erosion or undermining. 5K, Tri Chlorinated Phenolic ointment with characteristic smell. 6A, Hole found in a garage floor. 8A, Stable hand. 9G, Scottish female singer who used to shout a lot. 11G, Female relations. 12A, Lift up. 12I, New place for making money. 13A, Not urban. 13F, Large mammal facing extinction, found in India & Africa.

**DOWN:** A1, This person may go to the polling station in a boat. 8G, To do with the moon. C1, Early European invaders of Britain. C7, Another name for a shoemaker. E2, Common name for Meles Meles (short legged usually nocturnal carnivore). E9, Car repair boot. F4, Type of deciduous tree. G1, Found in most mens shoes. H10, Learned or sagacious. I2, Pea container. I5, Food poisoning recently associated with yogurt. J1, Tardy. J7, Sit on ones heels in unpaid for accommodation. K7, A compass point added to a mixed up utter will be bad. L3, The Devil by another name. M1, Lady who takes your particulars at the doctors.

Only one correct entry last month, sent in by Roy Cashmore, who gets a games tape. What happened to the rest of the "regulars"?, getting careless?!

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	F	O	R	T	U	N	E	T	E	L	L	E	R
2	L	O	B	Y	P	A	T	E	E				
3	D	M	A	E	O	T	A	L	C				
4	A	L	A	N	D	S	L	I	D	E	U	R	
5	T	U	N	G	Y	E	R	B	T	C	P		
6	I	N	S	P	E	C	T	I	O	N	P	I	T
7	N	A	E	R	A	H	T	S	R	F	I		
8	G	R	O	O	M	G	U	R	P	E	O		
9	V	B	A	D	L	U	L	T	R	N			
10	O	B	N	R	E	W	I	A	T	I			
11	T	L	U	E	S	I	S	T	E	R	S		
12	E	L	E	V	A	T	E	S	M	I	N	T	I
13	R	U	R	A	L	E	L	E	P	H	A	N	T

## DISMAN88 - REVIEWED BY FRANK FISHER.

This is a stand alone disk management utility which lays in graphic pages 2 - 5, assuming DOS at page 1. On typing LOAD and EXEC you are presented with a menu of eight options, four of which are used to reformat a disk, kill files, rename and protect. There is also a recover a killed file, drive select and dir. The last one is a memory monitor with printer option and set break point. I will not go too much into this program as an extensive manual is supplied.

Disman88 is available from MacGowan Consultants, 3 Beechwood Crescent, Broughton, Near Brigg, South Humberside, DN20 0SB for 8.00 on disk only.

## Correction to page 5 article.

I've just received a correction sheet from Bob Hall and it appears that the references to "pins 4 and 3" in the line which begins "I've hardwired the change by taking ...." should read "pins 6 and 5 respectively". Paul.



Letter from Helen Armstrong.

Nice to see the Dragoners at Hove. I gather from one or two traders that they thought business could have been better, although most seemed much more cheerful. The hall didn't seem too packed - why is it that people don't turn out when you have something to offer them?

I have now tidied up the last of my personal back issues and handed over the last of the Dragon User unused stuff. I have read the letters that readers - some of them people we had never heard from before - sent to me and Bob after DU closed and would be obliged if you could find a corner to publish my thanks to all of them for their good wishes and encouragement (even at that final stage!) and hope that they continue to get computing profit and pleasure from their Dragons.

Particularly also to those of you who are still running (or have run) Dragon fanzines, including yourselves. After the pro press goes out, fanzines keep people in touch, and even when there is a pro press, fanzines give another perspective (not to mention a freedom with typos and personal abuse which can bring tears of envy to the eyes of editors hunting through proofs for spelling mistakes and potential libels). And in answer to Simon Jones' long ago question, you will know, Simon, when the time comes to join th NUJ. It's like a calling. Either it comes to you in a blinding flash, or someone says to you "now you need to join the NUJ". And you need a referee of some kind. You don't need to be a member to be a writer, though. A writer is a writer.

It isn't fair to accuse the ex-DU reviewers of not reviewing just because there isn't any cash in it. DU never made anybody rich, and we used to support them by sending new tapes to regular people to keep them fed. They used to review stuff they had bought, as well. Not all of it got published, by any means. They were enthusiastic. The closure has knocked the stuffing out of some people, including Bob by the sound of it. I haven't spoken to him lately.

Yes, for those who asked, he did pull out of Weston-Super-Mare because of DU closing. I'm not entitled to speak for him, but I reckon DU closing was a bad shock to his system after putting so much work into it.

By the way, if anyone wants publicity for a show or new game, they should try sending a press release to Popular Computing Weekly. The editor sees me going past from time to time and I nag him, so he can't say he forgot about the Dragon.

Regards, Helen Armstrong.

((I'd just like to thank Helen for the articles she gave me at Hove. Unfortunately, Helen, some of them ARE too long to be used, but hopefully I may use some of the shorter ones in future Updates. The carrier bags did sterling work, and even survived being kicked by several people on the train to Victoria. Best wishes for the future. Stephen.))

Crossword 43 Answers.

## Across:-

- 1A). Visitext Extra.
- 3A). Ladle.
- 3J). Boy
- 4E). Stout.
- 5B). Cranesbill.
- 6A). Water.
- 6I). Lead.
- 7F). Tee.
- 9C). Bankbalance.
- 10A). Nile.
- 11D). Stilts.
- 12A). Barometer.
- 13A). Straitjacket.

## Down:-

- A1). Volkswagen.
- B5). Caustic.
- C1). Soda.
- C6). Tumbler.
- D4). Idle.
- D7). Braes.
- E7). Pan.
- F1). Editext.
- G2). Rooster.
- G9). Bolt.
- H1). Troubled.
- J7). Cradle.
- K3). Oil.
- K10). Neck.
- L2). Hyundai.
- L9). Crime.
- M1). Advertisement.



Fishy Business Four . . . . . Dudley.

Piscine salutations! Before I get down to the game (note use of singular), a quick comment on some libellous comments that have been made about me with reference to my reported bias. I feel I have to clear this up, otherwise next time somebody says to me "ah yes, but you would compliment Mandragore & ROTABB - you know the authors" I might well be tempted to stuff my Comp Pro right up their \$%&X! So yes, I admit it, I am at the same Sixth Form centre as Stewart Orchard, and have known John Foster for about three years. BUT, I do not favour their games in ANY way. What I write about Kouga software and any other game is purely my own opinion and I am not going to lie about a game just to satisfy certain people's pathetic and paranoid thoughts. For a start, I'm sure you lot would be the first to let me know if you think my comments are unjust, and I haven't had a complaint yet. Come to think of it, I haven't had anything at all from you lot in the way of correspondence. Now come along, there must be somebody out there with a poke, hi-score or unusual joystick position! For a start, I've run out of Dragon games to review, so from now on it's either fill up the column with your snippets of intellect, or be forced to read gargantuan chunks of my knowledge (what do you mean "No, no, anything but that!").

Right, I'm glad I've got that off my dorsal fin. Now down to this month's game, Formula One. Yes, in my desperation, I've been forced into giving this somewhat aged game the once over. Presently available from all good NDUGs, it was Pam D'Arcy's first commercial game for the Dragon...and her last. First of all, the presentation is v.scrummy (fish talk for good). There are 17 tracks to choose from, an easy to use track designer, amusing game over sequence, and slick graphics (especially on the backgrounds). However, the actual game isn't of the same high standard as the presentation. The fact that you have to load the full game from a cold start every time you want to try out a track you've designed is annoying, but not a fatal blow to the game. However, the gameplay is. It's good fun for a while, but then you suddenly realise you can't overtake. I've yet to manage it, my attempts continuously ending with a heap of twisted wreckage and a rise of several points in my blood pressure. I suspect a poke disabling car collision would solve this problem, and would, as overtaking is the only real drawback of this game, make Formula One the classic it should have been. As it stands though, I can't recommend it, even at the reduced NDUG price. Sorry Paul!

Well, sadly that's it, except to say that I've completed ROTABB with a score of 555,000, and anyone who writes to me with a higher score will be sentenced to the ancient goldfish punishment of WRSTHRGH (which involves, a water syphon, some gravel, and a large wet haddock). And if that doesn't encourage you to write then you're either cleverer than I thought or have the ancient goldfish disease of WRSTHRGHOPHOBIA (allergy to gravel and large wet haddock).

"Dear Dudley, I want to disagree with your review of Formula One. It IS possible to overtake the other car, even the computer controlled one. You can only do this on corners, but it IS possible. I suggest you put ROTABB down for a few seconds and play Formula One for a while.

I accept your veiled jibe at my comments over the past months, but I would suggest that people are more likely to say "ah yes, but you would compliment ROTABB; you wrote the storyline", seeing as how you proudly broadcast this in Update 56! Yours, Stephen."

You've been on the vinegar again, Dudley, even I can manage to overtake on Formula One, and I'm LOUSY at games!. Repent, before I set Captian Birdseye onto you!. Paul.

## CoCo Matters(4) ... Chris Rouse.

Continuing with the DOS commands, we have an assortment of odd commands this month: DRIVE, VERIFY, UNLOAD, and DOS.

DRIVE, from \$CEC5 to \$CED1, simply picks up the drive number given in the BASIC line, checks that it is in range (ie  $\leq 3$ ), and saves it in location \$95A. There is little point in using this routine in a machine code routine, as it is easier to simply POKE the required drive number into \$95A.

VERIFY, from \$D74E to \$D75E, checks the next word on the BASIC line, which must be either ON or OFF. If neither of these words follows then the routine exits via the Syntax Error command. If it is ON, the \$987 is set to \$FF, and if it is OFF then \$987 is cleared. When the SAVE command is run, it checks location \$987 and, depending on its state, either checks the sector it has just written is correct (ON) or just keeps writing (OFF). Again, there is little point in calling this routine, just POKE \$987 with the required value.

UNLOAD (\$D233 to \$D24E). This routine checks for OPEN files and CLOSEs them one by one, using the Close File routine located at \$CB06. This routine could be useful in a machine code program if you are unsure of how many files you have open.

DOS, from \$DF01 to \$DF4B, is the main difference between the two DOS versions. It is used by V1.1 to load and run OS9, although it can be used to load any other Disk Operating System. It is equivalent to the DragonDOS BOOT command, and the two routines perform in almost exactly the same way (DragonDOS loads track 0, sectors 3 to 18 whilst TRSDOS loads track 35, sectors 1 to 18). The whole of track 35 is loaded into memory at \$2600, and the first two bytes are then checked to see if they are OS. If they are not, then a warm start is made by a JMP \$A0C9. If they are, then a jump is made to \$2602 and so the new DOS, or whatever it is, is run. To 'BOOT' your own programs, write them in position independent code and add the assembler command FCC 10S1 to the very start. Save this code to track 35 (using the DSK0\$ command is one easy way). Remember that your routine must start immediately after the two OS bytes.

## Upgrading the CoCo.

This month we start to look at the method of adding extra memory to the CoC01s and CoCo2s. The following information should be taken as a guide, and remember that if you damage your computer, Tandy will be very uncooperative when it comes to repairing it. The first step is to identify your machine. If it is cream coloured, then you have a CoCo2, and if it is grey then you have a CoCo1. Different memory chips are needed in the two computers. The CoCo1 uses 4164s, 64K by 1 bit, while the CoCo2 uses two 4464 RAM chips. These are 4 bit by 64K and are single rail 5V supply chips. Do NOT attempt to fit 4164s in these machines. Also remember that memory chips can be damaged by static, so keep them in the conductive foam or aluminium foil until they are ready to be inserted. We will start with the CoCo2, as that is the easiest of the two to upgrade.

Remove all the screws holding the top on, including the one under the warning label! Note the lengths of the screws, and don't attempt to put the long ones back into the front of the computer or you will damage the case. Ensure that the plug has been removed from the mains socket before you start. Place the computer on a table, with the keyboard in front of you, and the mains transformer at the back and to the left. CAREFULLY remove the keyboard cable, as it is easily damaged. Lift off the keyboard and place it to one side. Locate the memory chips, these are towards the front and almost in the middle. They will be in sockets and marked 4416. Each has 18 pins. Prise them out with a small screwdriver, making a note of which way around they go. Now, on the left front of the circuit board you will find two solder pads labelled RAM size and 64K. The two pads are enclosed by a white silk screened rectangle. Solder a jumper between these two pads. Replace the keyboard and computer top, switch on and type PRINT MEM. This should give you 24871 (not 64K I know but it shows all is well). The CoCo, like the Dragon, cannot directly access the extra memory, you need OS9 or machine code to do that.

LISTER - REVIEWED BY FRANK FISHER.

This is a short and limited program so there is not a lot that can be said about it. The program itself is written in PIC, and is, initially loaded into Graphics pages 2-5, assuming DOS occupying Page 1. This gives a 6k program length and leaves the BASIC area free for your use, and is called by an EXEC call.

The program allows you to list your Basic programs to the screen with a few enhancements, i.e. the ability to scroll up and down a line at a time using the arrow keys, or jump a screen. You can also Dump your listings to your printer. There is a menu to set up the printer options, briefly you can LLIST with or without Bold line numbers, or HIGHLIGHT lines with selected strings, or print only lines containing selected strings, and have extra line spacing between each of these lines.

As is usual with programs from Mr MacGowan you get a fairly comprehensive manual detailing everything.

All in all a fairly useful program but limited. It really needs an on-screen editor to polish it up, especially a single key editor, at the moment you have to QUIT the routine, edit, then return to Lister.

I think 6 out of ten for this program.

Lister is available from MacGowan Consultants, 3 Beechwood Crescent, Broughton, Near Brigg, South Humberside, DN20 0SB on cassette for 10.00 and on disk for 12.00.

SEIKOSHA SCREEN DUMPER - IAN SWIFT

This is a high resolution graphics screen dumper for use with the Seikosha GP100A printer. The program is written in basic which makes it easier to customise.

Having looked at the program on screen I found that the introduction and options were quite clear in that it could be time saving for the experienced user and helpful for the novice. One of the good facilities of the program is that if the screen that you wish to dump is not already in memory, the program allows you to load it in from disk.

High resolution graphics screens written in PMODES 0,2,4 can be dumped, with an option of a LARGE or SMALL copy, large being 4 times bigger than the small copy. To accomplish a large copy each pixel is printed 4 times. This obviously reduces the resolution on paper.

However, with the program being written in basic, it is' painfully slow, typically taking approximately 8.5 minutes for small and approximately 19.5 minutes for large copies. This process may be speeded up if your Dragon accepts the speed-up Poke. Also the printed copy is the reverse image of that on the screen, i.e. Black on screen becomes white on paper and buffgreen on screen becomes black on paper.

If you own a Seikosha GP100A printer and do not already have a graphics screen dumper I can recommend this program providing the price remains at its present level.

Seikosha Screen Dumper available from Dragonfire Services, Unit 3, Rising Sun Enterprise Centre, Blaina, Gwent on tape or disk for 2.00 plus postage and packing.

New Era Strikes Again!.

Simon Jones has asked me to remind you that his latest publication, "The Invader's Summer Diaries" is now available. Price is 3.00 for four month's issues, or 70 pence per copy. Orders to Simon at 37, Collins Meadow, Harlow, Essex.



Dos Files.

So you've got your disc drive, DragonDos cartridge and a box of blank discs - but the prat who sold you the system had lost the manual - "It wasn't much good anyway..." So now what do you do? Learning that SAVE will save a Basic program to disc isn't too difficult, and LOAD will load it back - but what about datafiles?

There are two Basic commands for this:- CREATE and FWRITE. The first merely creates a datafile, the second is used for storing the items of data in that file. The simplest way to describe how it is used is to compare a routine for storing data on tape with the equivalent routine for storing the same data on disc.

OPEN "O",Z-1,N\$ is done with CREATE N\$. To store the items of data:-  
 PRINT #-1,A:PRINT#-1,B\$,C\$                      FWRITE N\$;A:FWRITE N\$;B\$:FWRITE N\$;C\$  
 I've used a separate FWRITE command for each variable - not necessary, but it makes debugging much easier, rather than:[100] FWRITE N\$;A:FWRITE N\$;B\$,C\$ - which is just as correct. If there is an array to be stored, then make up a loop just as for tape e.g.

FOR X=1 TO 255:PRINT#-1,W\$(X):NEXT:CLOSE #-1 would be used for tape. The Dos routine being:-

FOR X=1 TO 255:FWRITE N\$;W\$(X):NEXT:CLOSE

The only points to remember are that: (1) Each FWRITE command must use the filename (N\$) followed by a semi-colon, then the variable. (2) Don't mix numeric variables - A,B,Z etc. - with string variables - A\$,B\$ - in the same FWRITE statement. (Another good reason for keeping separate statements for each bit of data.)

To read it back in, there are the commands FREAD and FLREAD. FREAD is the simplest - it will read numeric or string data, provided it is used with the correct type of variable. As an example, to read the file created above:-

FREAD N\$;A:FREAD N\$;B\$:FREAD N\$;C\$:FOR X=1 TO 255:FREAD W\$(X):NEXT:CLOSE

The CLOSE command closes all disc files - on all drives - again, not absolutely necessary, but "recommended". FLREAD is used for string variables only, which may contain punctuation, and it will accept commas, semi-colons etc as part of the variable. It is very useful for reading text type data (obvious, isn't it?). FREAD will interpret a comma as being the end of one bit of data. e.g. if A\$ contained the phrase "What, the hell" then FREAD would read A\$ as being "what", and try to read the remaining words into the next variable.

Things to remember are:- Data must be read in in the same order as it was written to disc. The safest routine to adopt is to use the FWRITE subroutine as a basis for the FREAD subroutine. Use right sort of variable for each bit of data - string data must be read into a string variable - just as for tape.

Finally, the EOF mystery. There is such a function for disc, to check when the end of file has been reached, but I have never managed to get it to work reliably. A far safer method of checking for end of file is to use your own "end marker".

It is the FOR...NEXT type of file which causes the problems - an array isn't necessarily used up to its limit set in the DIM statement e.g. DIM W\$(100). So, before the file is written to disc, use a numeric variable to keep track of the number of entries, or "X's", in the case of the example here. Then, once the file has been created, FWRITE this variable, and make up the FOR...NEXT loop like this:-

FWRITE N\$;N:(maximum no. of entries):... FORX=1 TO N:FWRITE N\$;W\$(X):NEXT

When reading from the file, this variable is read in first - FREAD N\$;N - then the loop for the array can be set to this number - N. FOR X=1 TO N:FREAD N\$;W\$(X):NEXT

Another method is to make the last variable or bit of data a special character, like "\*" or "@", so that when that character is read, the routine jumps to the program line containing the CLOSE command.

Next time, a bit about random access files. (Yes, you can do it with DragonDos...)

Ken Grade.

P.D. Disc from S.C.G.

The disc is called "Credit", and sub-titled "The Ultimate Visual Editor"! It is written by Michael Radziej, and to quote the manual "... Credit is P.D. This means that there is no copyright and you can pass it to anyone you like (or hate!)". All I'll tell you is that it is good, and that if you want a copy (with manual) you should send 3.00 to cover the cost of disc, postage and printing to Paul Grade at the usual address. The SCG have never produced a dud yet, so you've nothing to lose but your cash!. Why not give it a try?.

Advance Warning!.

The SEPTEMBER issue of Update may be a very limited one as owing to the fact that I have to carry out some necessary and long overdue re-wiring and decorating of this flat it will not be possible to handle the normal print run. The issue may be only around four pages for that month. Sorry, but it's unavoidable!. Paul Grade.

## GROUP SERVICES.

**P.D.UTILITY LIBRARY.** Contains a very good collection of utility programs and routines available at a nominal charge. new routines always wanted for Dragon, Tandy and other machines. for details send s.a.e. to:-  
Lee Cooke, 117, Limbrick Lane, Goring, Worthing, Sussex.

**DRAGONART GRAPHICS LIBRARY.** Contains THE biggest and best collection of graphics screens for the Dragon, all available at nominal charges. The library also wants YOUR original graphics efforts. Full details and list available from:-  
The Librarian, 5, Glen Road, Parkstone, Poole, Dorset.

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The Librarian, 5, Glen Road, Parkstone, Poole, Dorset.

**BACK ISSUE UPDATES.** Reprints of all issues of Update (from original master sheets) available at ONLY 85 pence per copy inclusive of postage. 14 page index of Update articles only 2.50. Single articles 50p. each. (see for details). @ Send to Eric Hall, 32, Thackeray Hall, Fareham, Hants. PO16 0PG. Cheques made payable to "Back Issues Dept. (NDUG)".

## GROUP SPECIALS!

**UPGRADE MANUAL.** Full DIY instructions for upgrading your D32 to 64K. Written by Bob Hall. Price 2.00.

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**DRAWEEZEE.** The best selling Graphics utility program. Written by R.A.Davis. Available on tape at 2.50 inc. or the NEW DISC VERSION with FREE "Mirrorimage" program included (DOS V1.0 or CoCo DOS) only 3.00 inc.

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**DRAGON DOS TO COCO DOS.** Want to run Dragon discs on your CoCo? No problem. This program written by Chris Rouse allows your CoCo to convert Dragon DOS discs to its own format and retokenise Basic routines. Versions available for CoCo DOS V1.0 and V1. Price 5.00 inclusive.

**COCO DOS TO DRAGON DOS.** Dragon version of the above program. Allows you to convert CoCo discs to Dragon DOS format. Written by Randy Longshore. Price 5.00 inclusive.

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ALL THE ABOVE ARE OBTAINABLE FROM PAUL GRADE AT 6, NAVARINO ROAD, WORTHING, SUSSEX. CHEQUES MUST BE MADE PAYABLE TO A.D.U.G.

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**DELTA DOS UTILITY.** m/c utility to copy ALL Basic and m/c files from disc to tape in one operation. Basic listing of loader and Hex dump price 1.00, or on tape 2.50 inclusive.

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## MISCELLANEOUS ADVERTS

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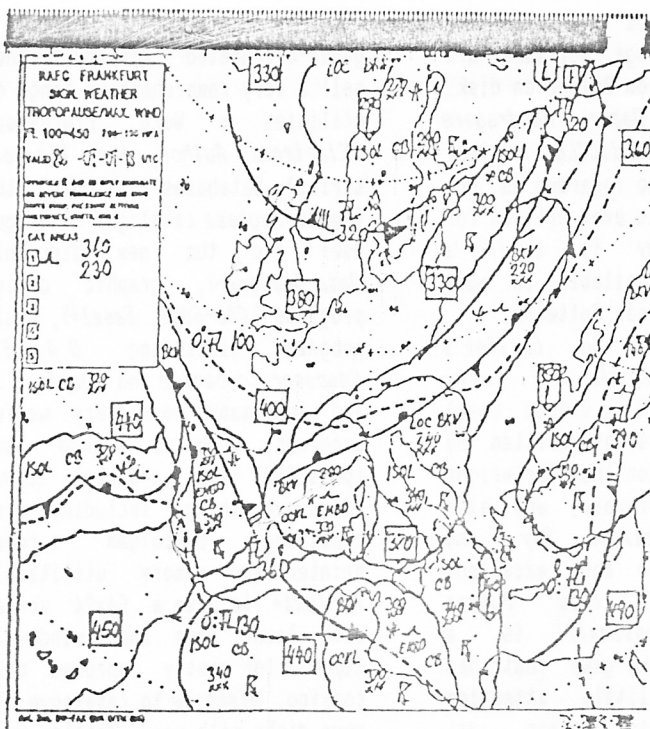
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CONTINUED →



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WEFAX is being offered in two versions. The first, available from Lee Cooks P.D Software Library (normal rates). This version does not include a printer routine and has only minimal documentation. The second is a full version complete with printer dump and 17 page manual. Price for this version is 5.00 pounds. For full details send SAE to the address below.

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FOR SALE. Dragon software, hardware, books, etc. Send SAE for list.  
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# Pulser Squeezes Orange

Multi-million pound takeover of Orange Software gives Pulser Software leading market role.

The pound strengthened in the city last night as Pulser Software of Oldham fought off fierce competition for the takeover of Orange Software, formerly a leading Dragon software company.

Through the takeover, Pulser has secured its position as the leading supplier of software for the Dragon and Tandy. At the Dragon & Tandy Summer Show in Hove on June 3rd, Pulser were boasting a range of over 80 titles, in formats for Dragon cassette, DragonDOS, Deltados, Tandy cassette and Tandy disk.

ALL prices have been reduced on both ex-Orange and original Pulser ranges. Also, new titles were released at the show - 'Revenge of the Alien Bongo Beast in the Crissy Crossy Lines Dimension' from Kouga Software and 'Visitext Deluxe'. 'Revenge' is a superb new arcade game written by the brilliant Stewart Orchard (author of 'Ball Dozer'), and 'Visitext Deluxe' is the latest addition in the already excellent 'Visitext' word processor series, now providing a 'mail-merge' feature!

Without doubt, Pulser has the most impressive range of arcade games for the Dragon/Tandy. All Ex-Quickbeam titles are available from Pulser on disk, including *Superkid*, *Fire Force*, *Shaolin Master Plus*, *6809 Express*, *Indoor Football*, *Frankie*, *Gordon Bennett*, *Dickie's Den*, *Dickie Spaceman* and *Galactic Gus*. Pulser also sells Roy Coates' *Beastalker*, often regarded as one of the best ever Dragon games, plus *Beanpatch* to go with it for altering and saving screens. These can also be bought on one tape/disk together, called *Beanpatched*.

All titles from the promising new company Kouga Software are now available from Pulser on disk. These are *Ball Dozer*, *Mandragora* and *Revenge OTABBITCCLD*. Another game that is also regarded as one of the best games ever written for the Dragon/Tandy is *Lucifer's Kingdom* and is available in most formats from Pulser Software.

Often compared to *Lucifer's Kingdom* is *Utopia*, a very highly-rated (5/5 in Dragon User) arcade game. This was written by top programmer Jonathan Cartwright of Starship Software, who also wrote *Spy Against Spy* and *Impossible!!*, two more excellent games available from Pulser Software. *Impossible!!* is a superbly-addictive game that has received very little attention from the computer press, yet features excellent 3D-effect scrolling colour graphics, music and digitised speech over ten challenging levels of gameplay. This game works only on colour displays.

Pulser also boasts an impressive line-up of adventure games. *Rally* is a brilliant 170k+, real-time, disk-only adventure that features some of the best graphics ever seen on the Dragon. *Rally* received a 97% review and was voted adventure of 1988.

Many more adventures are also available from Pulser, including the five superb text adventures from Simon 'Solver' Hargrave, and the three 'Destiny' graphic adventures from Jonathan Cartwright at a greatly reduced price. Others include ex-Quickbeam adventures (*Terror Castle*, *Shrunken Scientist*), a massive Flex adventure and several other well-known adventures (*13th Task*, *Larkspur II*, *Fishvan Scandal*, etc).

But by no means is Pulser a games-orientated company. They sell a very comprehensive range of utilities - Word Processors (*Electronic Author*, the *Visitext* series), Databases (including the famous *Magbase* catalogue of Dragon User and the new disk-only *Data-Designer*), graphic design programs (*CAD-6809*, *Easel+*), music programs (including *D.A.M.S.*, *Composer Companion* and *Composer M*) and many, many more very useful programs, such as *Orange Boot* (puts BOOT files on disks), *Zapper* (does everything, including disk repairing, 64-column screen, printer and memory utilities), *Hi-Text+* (to give a 64x24 screen with lower case and windows), *Copycat* for vastly improved disk copying, *Diskbase* to catalogue all your disks with very little work required, *Duplidisk 2* and *Duplicas* for copying tape-disk or tape-tape, AND OTHERS! Flex utilities are available, as are the excellent DOSplus eproms.

Pulser have even thought of educational software, with *Physics and Chemistry 'O' Level*, and the new *French Test* for teaching and practising either simple or advanced French.

On top of all this software, Pulser also supplies hardware at very reasonable prices, including computers, disk drives, joysticks, second-hand software and much more. The takeover of Orange Software has made Pulser Software into the most comprehensive company, selling almost anything you could possibly want for your Dragon. Send an A5-Sized S.A.F. and you will receive a copy of Pulser's catalogue and full price list.

Contact Pulser at:  
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